FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

12 to 18 January, 2014 (Week 03)

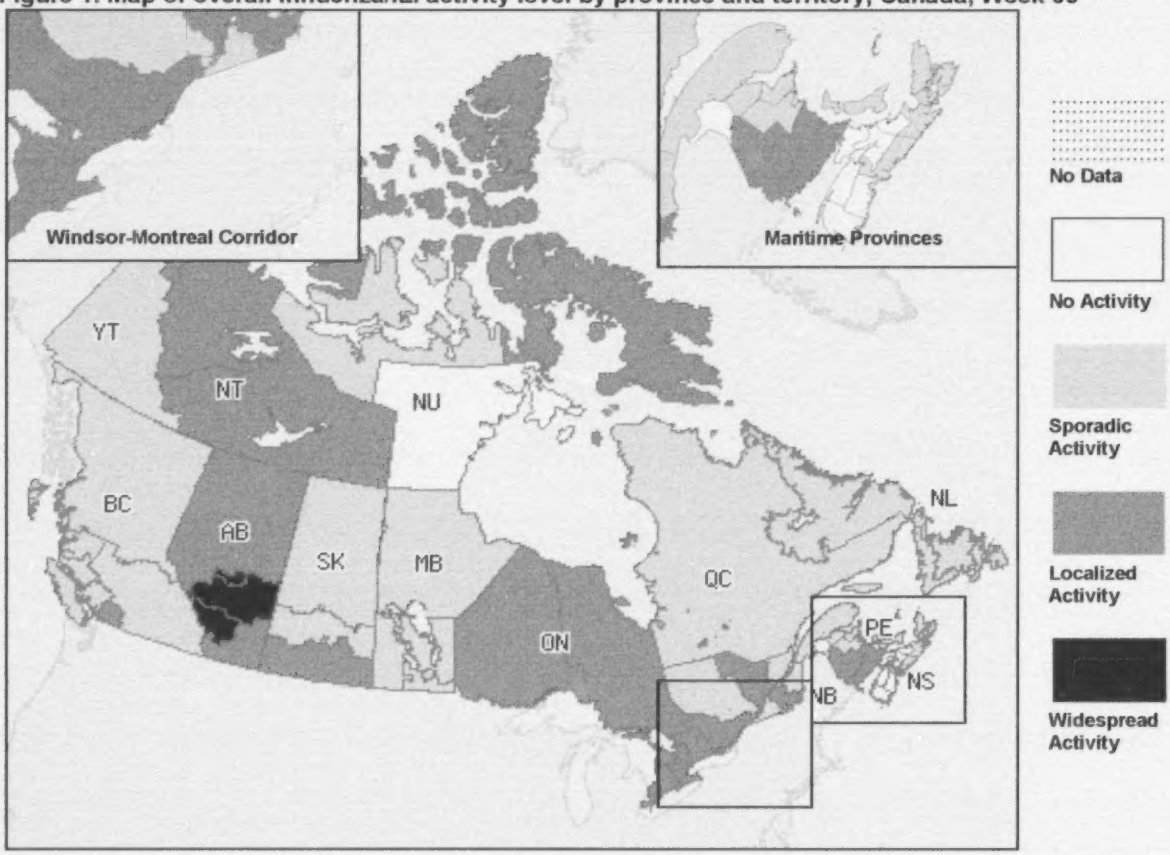
Overall Summary

- In week 03, overall laboratory detections of influenza decreased slightly, reflecting decreased activity in some regions that experienced an earlier start to the influenza season, and increases in activity in other regions. Prescriptions for antiviral medications to treat influenza have also decreased.
- The influenza A(H1N1)pdm09 virus is the most common influenza virus detected thus far this season, accounting for more than 90% of influenza viruses detected. Adults 20-64 years of age have been the most impacted thus far this influenza season, as reflected by laboratory detections of influenza, hospitalizations and antiviral prescriptions for treatment of influenza.
- The number of Canadians seeking medical attention for influenza-like-illness continued to increase in week 03, as did paediatric hospitalizations.

Influenza/ILI Activity (geographic spread)

In week 03, three regions in Alberta reported widespread activity, and 19 regions (in BC(1), AB(2), SK(1), ON(7), QC(2), NB(3), NT(2) and NU(1)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 03

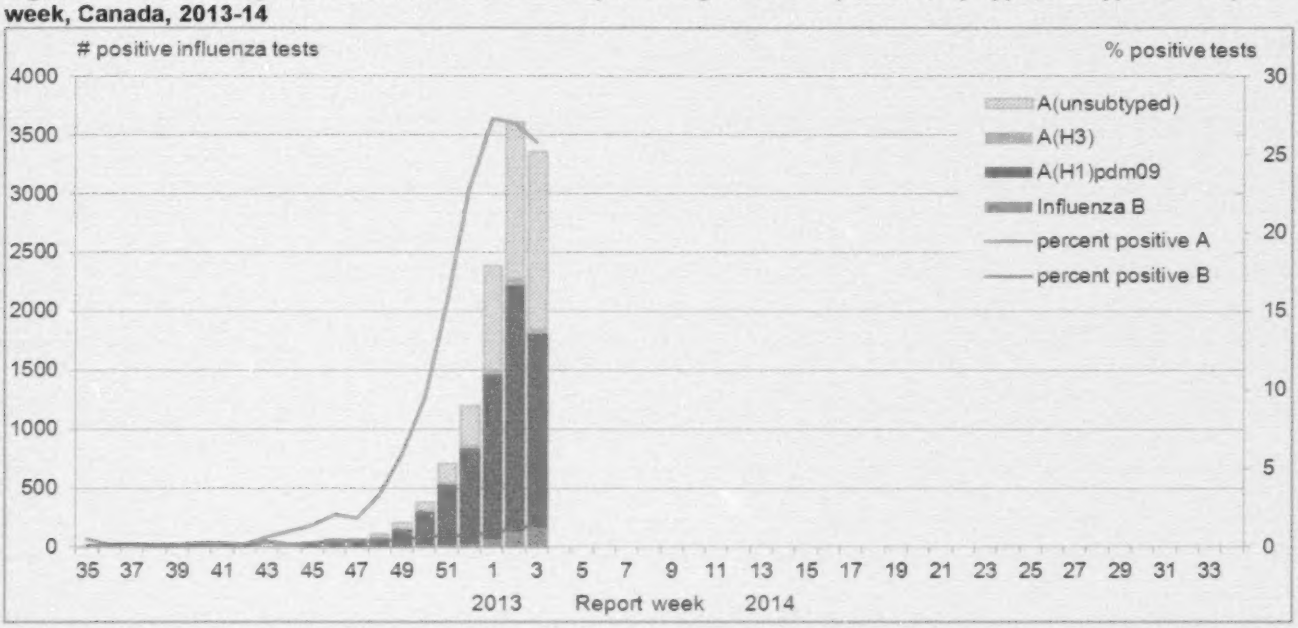


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased from 3,615 in week 02 to 3,364 in week 03. The percentage of positive influenza tests decreased slightly from 28.2% to 27.2% (Figure 2). Cumulative influenza virus detections to date have been predominantly influenza A (95%). Among subtyped influenza A viruses, 97% (7,068/7,282) were A(H1N1)pdm09 (Table 1). Detailed information on age and type/subtype has been received for 8,793 cases to date this season. A significantly greater proportion of laboratory detections of influenza have been reported in adults 20-64 years of age compared to those ≥65 years of age this season compared to the 2012-13 season (Table 2).

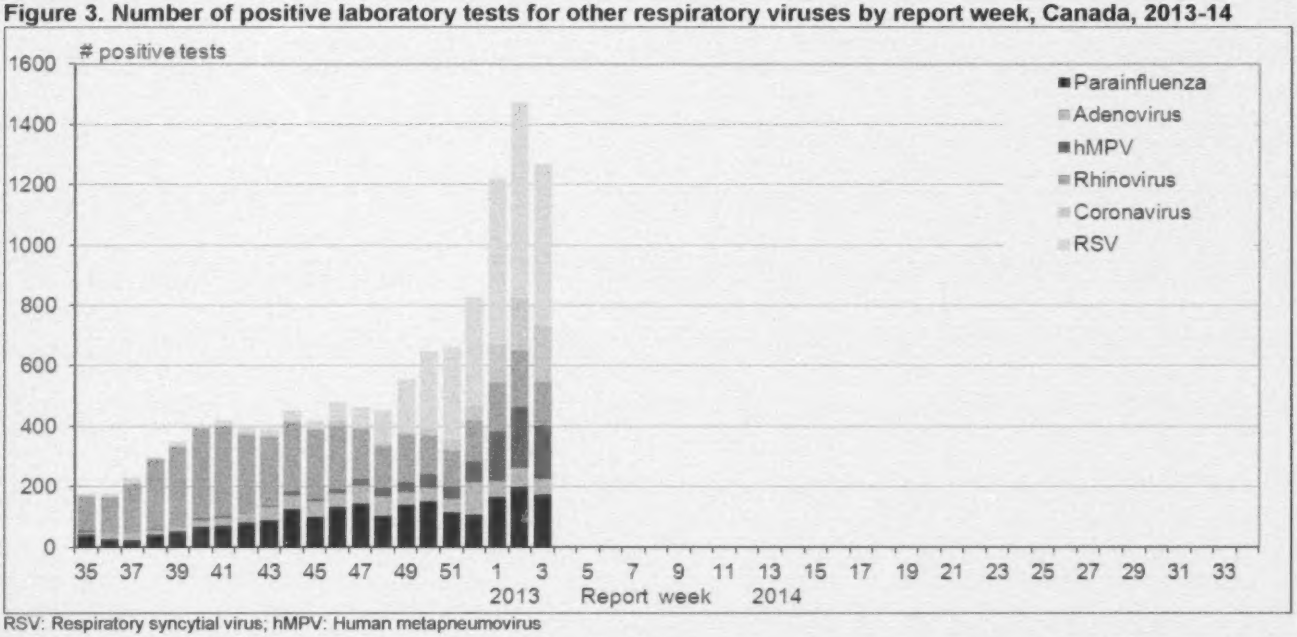
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



In week 03, the number of positive tests for RSV decreased slightly, but the percentage of positive tests decreased for the second week in a row. RSV in Canada shows a seasonal pattern with a broad peak over the winter months. The number of positive tests for coronavirus increased, while detections of other respiratory viruses were stable in week 03 compared to the previous week (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (January 12 to 18, 2014)					Cumulative (August 25, 2013 to January 18, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	442	376	16	50	12	1281	1152	45	84	31
AB	469	407	4	58	9	2831	2696	28	107	36
SK	225	176	0	49	0	950	660	0	290	1
MB	124	28	0	96	4	244	127	0	117	13
ON	824	366	11	447	19	3497	1750	136	1611	73
QC	712	66	1	645	107	2122	224	2	1896	366
NB	310	168	0	142	0	545	312	1	232	1
NS	14	12	0	2	0	44	24	2	18	0
PE	18	18	0	0	0	19	19	0	0	0
NL	48	29	0	19	27	130	104	0	26	53
Canada	**3186**	**1646**	**32**	**1508**	**178**	**11663**	**7068**	**214**	**4381**	**574**
Percentage[2]	94.7%	51.7%	1.0%	47.3%	5.3%	95.3%	60.6%	1.8%	37.6%	4.7%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

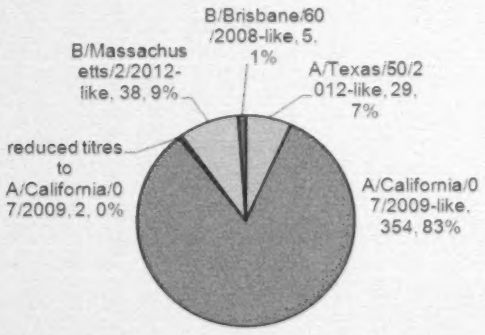
Age groups (years)	Weekly (January 12 to 18, 2014)					Cumulative (August 25, 2013 to January 18, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	341	115	2	224	20	1378	862	16	500	53	1431	16.2%
5-19	133	57	1	75	15	601	432	10	159	51	652	7.4%
20-44	443	188	0	255	16	2759	1816	16	927	92	2851	32.2%
45-64	387	177	0	210	26	2370	1542	22	806	134	2504	28.3%
65+	247	78	1	168	44	1171	622	36	513	184	1355	15.3%
Unknown	9	9	0	0	0	52	40	4	8	0	52	0.6%
Total	1,560	624	4	932	121	8331	5314	104	2913	514	8845	100.0%
Percentage[2]	92.8%	40.0%	0.3%	59.7%	7.2%	94.2%	63.8%	1.2%	35.0%	5.8%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 428 influenza viruses [29 A(H3N2), 356 A(H1N1)pdm09 and 43 influenza B]. The vast majority (98.8%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Five influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 428



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 326 influenza viruses for resistance to oseltamivir and 320 viruses for resistance to zanamivir, and all were sensitive. All 254 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

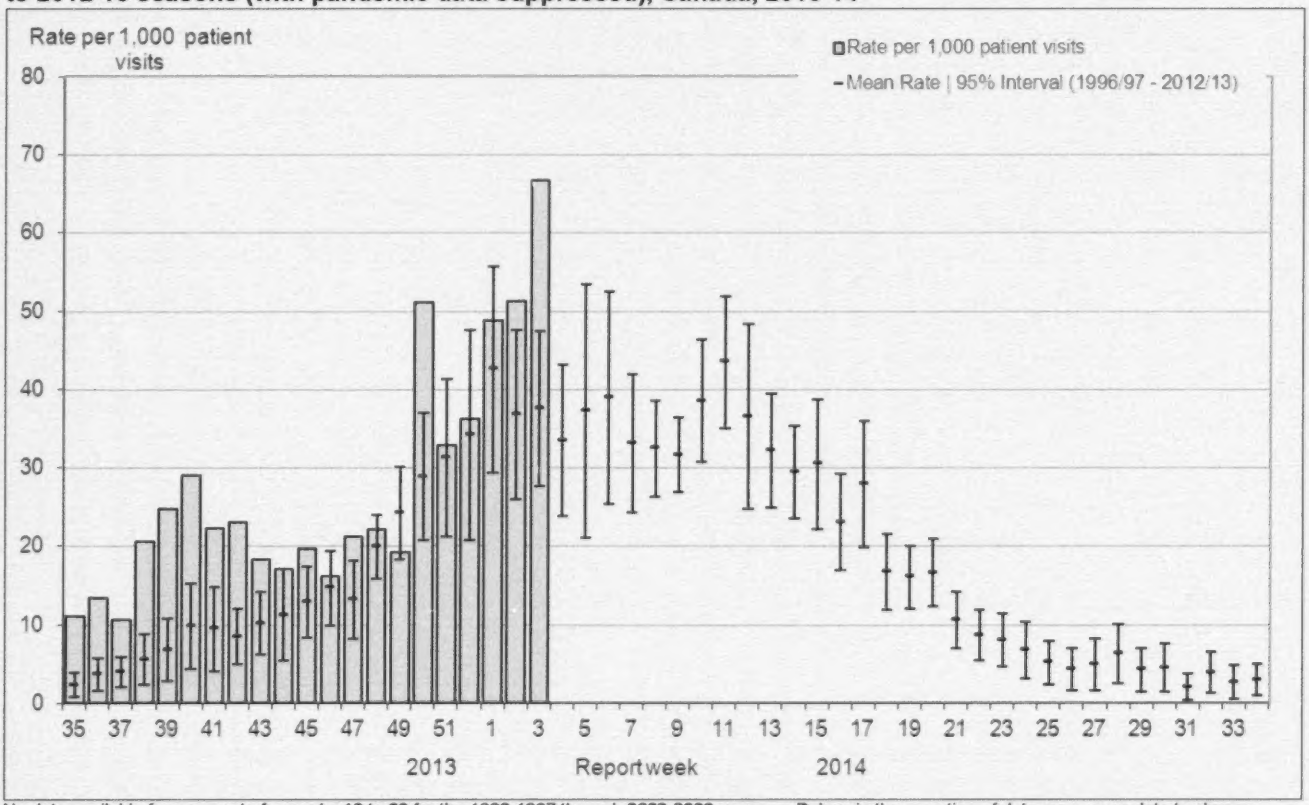
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	25	0	25	0	31	31 (100%)
A (H1N1)	262	0	256	0	223	223 (100%)
B	39	0	39	0	NA[1]	NA[1]
TOTAL	326	0	320	0	254	254 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 51.2/1,000 in week 02 to 66.8/1,000 in week 03; which is above the expected range for week 03 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

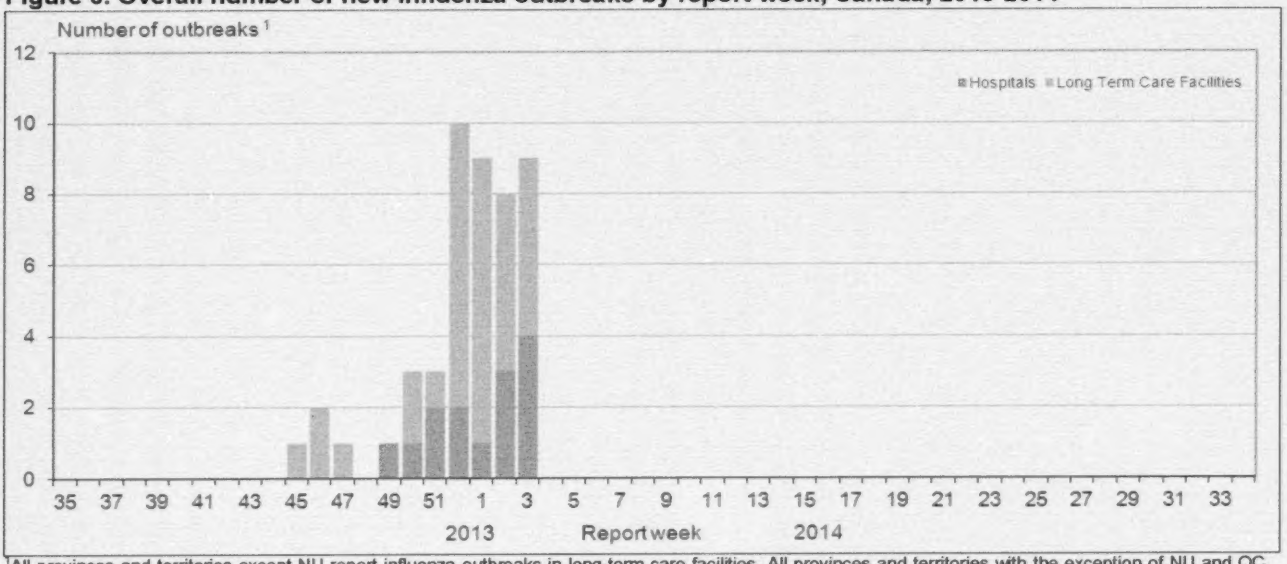


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 03, nine new influenza outbreaks were reported: four in hospitals and five in long-term care facilities (Figure 6). In addition, three outbreaks of influenza-like-illness were reported in week 03: two in schools and one in another facility or community.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

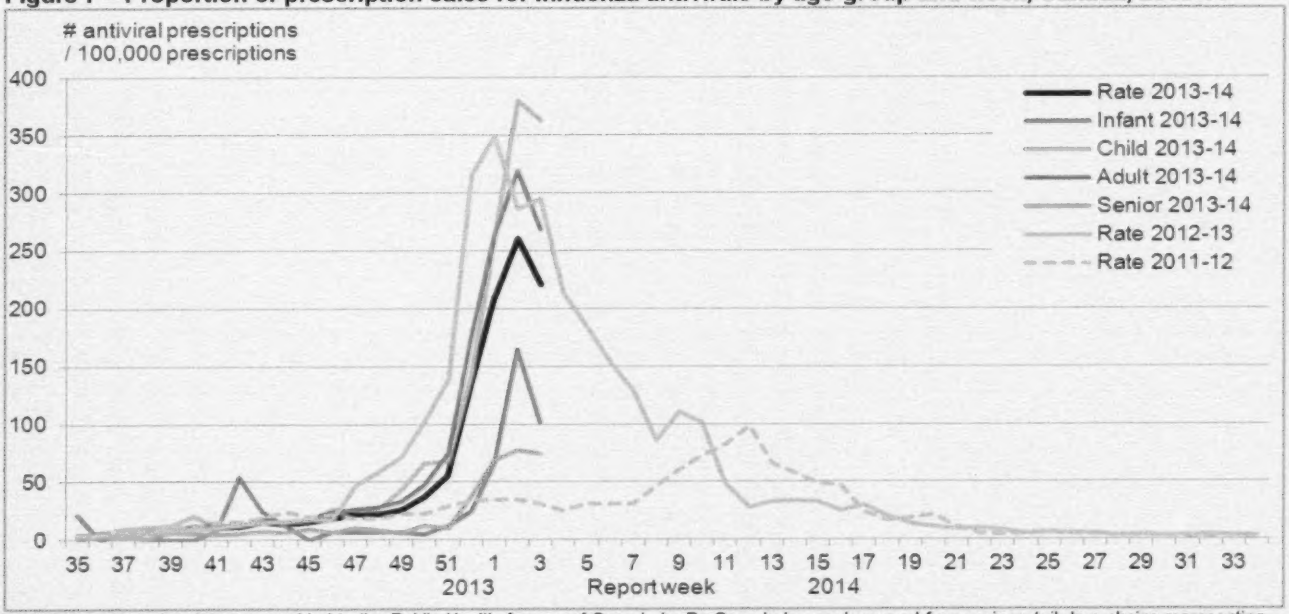


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

The rate of prescriptions for influenza antivirals continues to follow a trend consistent with the timing and demographics of laboratory detections of influenza this season. In week 03, the largest proportion of prescriptions for antivirals was among children 2-18 years of age followed by adults 19-64 years of age (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 03, 60 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 55 in week 02. All but two of the hospitalizations in week 03 were cases with influenza A (Figure 8a). Fifty (83%) of the cases were <5 years of age. Nine ICU admissions were reported in week 03, one child under 6 months of age, two children 6-23 months of age, two 2-4 years of age, and four 5-9 years of age; all with influenza A. No deaths were reported.

To date this season, a total of 310 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 95% of which have been influenza A, and 98% of those subtyped were A(H1N1)pdm09 (Table 4). Two hundred and fifty one cases (81%) have been under 5 years of age. Forty ICU admissions have been reported; all but two cases with influenza A, and the majority A(H1N1)pdm09. The highest proportion of ICU admissions have been among children aged 6-23 months (32.4%) (Figure 9a). Among the 33 ICU cases with available data, 25 were reported to have comorbidities or concurrent infection. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 03, 69 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 121 in week 02. Among cases in week 03, 68 (98.6%) were influenza A, of which four were A(H1N1)pdm09 and 64 were A(unsubtyped). Almost half of the hospitalizations occurred among adults 45-64 years (32; 46.4%). Five ICU admissions were reported in week 03: one case 20-44 years of age, three cases 45-64 years of age and one case ≥65 years of age. One death was reported in an adult 45-64 years of age with influenza A(unsubtyped) (Figure 8b).

To date this season, 532 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 504 (94.7%) with influenza A, predominantly A(H1N1)pdm09. The majority (76.5%) have been adults over 45 years of age (Table 5). ICU admission was required for 66 hospitalizations: all but four were influenza A (36 A(H1N1)pdm09 and 26 A(unsubtyped)). Three quarters of the ICU admissions were >45 years of age. Of the 45 ICU admissions with information on influenza vaccination, 32 (71%) reported not having been vaccinated this season. Six deaths have been reported: one case ≥65 years of age with A(H1N1)pdm09, one case ≥65 years of age with A(unsubtyped), three cases 45-64 years of age, one with with A(H1N1)pdm09 and two with influenza A(unsubtyped), and one case 20-44 years of age with influenza A(H1N1)pdm09 (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

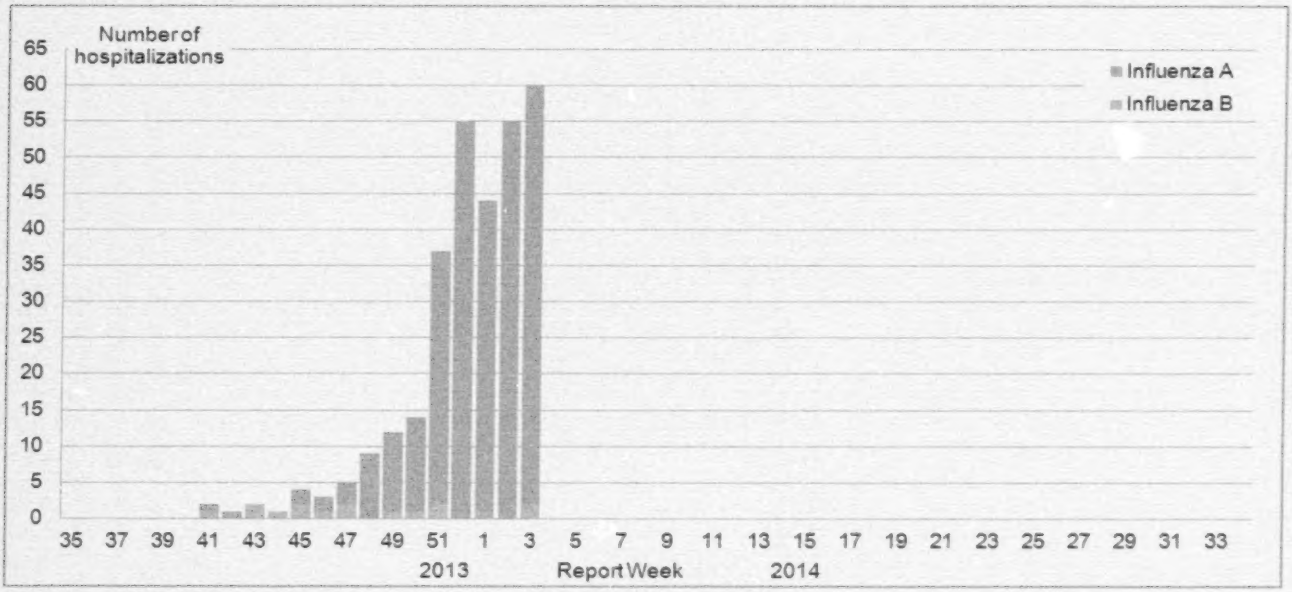
Age groups	Cumulative (25 Aug. 2013 to 18 Jan. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	63	16	0	47	2	65 (21%)
6-23m	84	29	0	55	3	87 (28%)
2-4y	93	32	2	59	6	99 (32%)
5-9y	35	12	0	23	3	38 (12%)
10-16y	19	9	0	10	2	21 (7%)
Total	294	98	2	194	16	310
% [1]	94.8%	33.3%	0.7%	66.0%	5.2%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

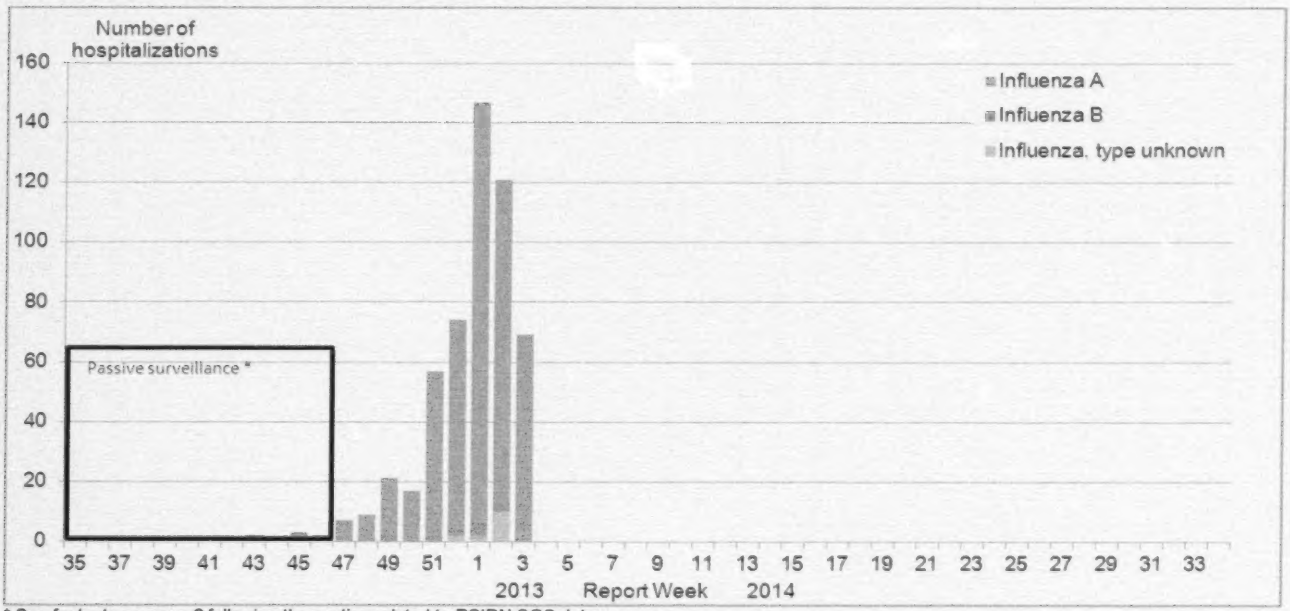
Age groups (years)	Cumulative (25 Aug. 2013 to 18 Jan. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	4	2	0	2	0	4 (1%)
20-44	113	44	1	68	2	115 (22%)
45-64	204	75	2	127	4	208 (40%)
65+	179	62	6	111	8	187 (36%)
Total	500	183	9	308	14	514
% [1]	97%	37%	2%	62%	3%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Fourteen cases for which the influenza type has not yet been reported, and four cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



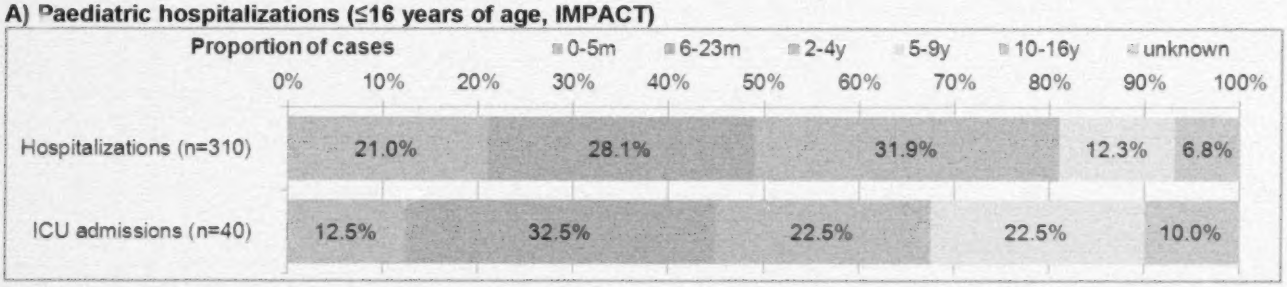
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



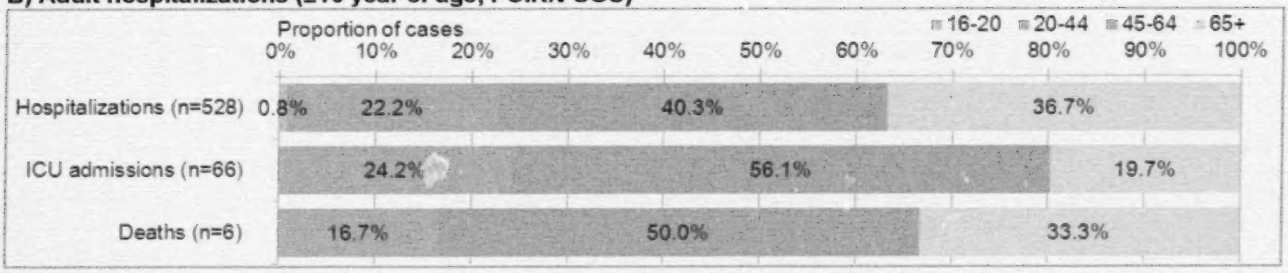
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 03, 396 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The majority were cases of influenza A (387, 97.7%), of which 204 (52.7%) were A(H1N1)pdm09, four were A(H3N2), and 179 (46.3%) were A(unsubtyped). Among the 12 ICU admissions reported in week 03, 10 were adults 20-64 years of age. Thirteen deaths were reported, nine of which were adults 20-64 years of age. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 1875 influenza-associated hospitalizations have been reported, 97.7% with influenza A (Table 6). The majority of hospitalizations have been cases 45-64 years of age. A total of 182 ICU admissions have been reported this season, all but one with influenza A; and 76% were among adults 20-64 years of age. Eighty-four deaths have been reported, and all but one with influenza A. The highest proportion of deaths has been among adults 20-64 years of age (52%), followed by adults ≥65 years of age (38%). It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 18 Jan. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	345	181	4	160	13	358 (19%)
5-14	68	39	3	26	3	71 (4%)
15-19	22	14	1	7	0	22 (1%)
20-44	326	250	2	74	3	329 (18%)
45-64	614	410	11	193	5	619 (33%)
65+	451	266	29	156	19	470 (25%)
Total	1826	1160	50	616	43	1869
Percentage[1]	97.7%	63.5%	2.7%	33.7%	2.3%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
* Six cases for which age information is not available have not been included in Table 6.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Thirty-eight new cases of human infection with influenza A(H7N9), with three deaths, have been reported by the World Health Organization since the last FluWatch report. Globally to date, the WHO has been informed of a total of 219 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 55 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

One additional case of MERS-CoV which resulted in death has been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 179 laboratory-confirmed cases of infection with MERS-CoV, including 76 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.